

others, that makes me think it possible that the latter animal, and *U. lagomyiarius*, and possibly also *U. clarki* from the Ching Ling, may ultimately be found to be generically different from true *Ursus*, and possibly referable to *Spelæus*.

NOTES ON WOOD RAT WORK

BY EDWARD R. WARREN

[Plates 10-11]

While collecting at Alma, Park County, Colorado, in the autumn of 1914, I discovered some unusually interesting work of the "mountain rat," or Colorado bushy-tailed wood rat, *Neotoma cinerea orolestes*. This was in an old shafthouse on Buckskin Creek, about a mile from the town of Alma. While I have seen much of the work of this and other species of *Neotoma*, in some respects this was very different from any I have seen elsewhere. Whether the work of one or two of the animals I cannot say, though on one visit to the place I saw two.

The principal accumulation was about the shaft, which was toward the corner of the building, opposite the wide door shown in figure 1. This shaft was a two compartment affair, with manway and bucketway, the former open at the top, the latter covered with the usual sloping doors. About the shaft, but principally about the manhole, and even on top of the timbers, were piled many sticks. The pictures perhaps show better what a mass of stuff was there. The manway measured 30 inches square inside; an outside measurement could not be made, but the base of the pile was 48 inches on one side, and 45 inches on the other; the material was piled steeply, and much of it was green aspen leaves and twigs, just the tips of the branches. As these were often piled 12 inches high and 8 inches thick it will easily be seen that considerable labor was involved in gathering so much. While the accumulation was mainly about the manhole, it also extended somewhat along the bucketway, which was the same width, but a trifle longer.

The blacksmith forge in the shafthouse was on the same side of the building as the door previously mentioned, by the window which can be seen both in the picture of the building and in that of the forge. Here were more of the aspen leaves on the forge itself, on a ledge level with it, and on shelves and ledges above, five piles altogether. The

nest was on the topmost ledge. On the ledges with these aspen leaves, which, where thickest, were laid in regular layers, were also pieces of fungus from dead logs. The nest was the usual globular affair made of various fibers.

From an observation I made it seems possible that the leaves and fungus were food supplies for the winter. The following extract from my notebook may be of interest:

When I went into the house the rat was on the ledge where the nest is, but went back into the nest. Did not seem much afraid. A few minutes after, when I was at the shaft, I saw two rats run along a ledge at the other end of the house and out onto the roof. Presently one came back and was fooling on the shelves at that end for several minutes, finally returning to the nest. I watched it climb about on the joists and boards and it seemed to be able to get a foothold almost anywhere. When I was all done with the photographic work and was examining things I stood on the forge and poked the nest with my finger. The rat came out and ran along the ledge, stopped four or five feet from me and apparently forgot all about me, for it began to eat something and fooled around for several minutes. I saw it have one aspen leaf in its mouth and am sure I saw it eat another. It presently came back to the nest while I stood there.

I remark in my notes that it may have been eating some of the fungus before I saw it with the aspen leaf. The altitude of the locality is about 10,300 feet, the winters are long with considerable snow, and foraging must be difficult at that season, so that it behooves a non-hibernating animal to lay in a good supply of food, and the rats seem to have availed themselves of the most convenient and accessible material. Elsewhere I have seen leaves of kinnikinnick brought into buildings and laid away much as the aspen leaves were, but have no evidence they were used as food. As a matter of fact I regarded it as a manifestation of the mania these animals have for carrying about useless articles.

Eight days after my examination of the work I paid another visit to the shafthouse as I was passing by. The pile at the manway appeared to have had additions made to it. Climbing upon the forge I poked the nest and the occupant came out, stopped hardly a foot away from me, and after a moment went back to the nest. When disturbed again it halted for a moment not far away and then went on out over the broken-down roof. A pile of sticks could be seen on the roof at the gallows frame of the shaft; it was inaccessible and could not be examined.



FIG. 1. SHAFTHOUSE, NEAR ALMA, COLO., IN WHICH THE WOOD RAT WORK WAS FOUND

The shaft was opposite the door at right end of house; the forge was by the window at the left. Sticks can be seen on the roof at the gallows frame.



FIG. 2. INTERIOR OF SHAFTHOUSE

Showing forge, with leaves piled on ledges above it, and nest on topmost ledge.

(Warren: Notes on Wood Rat Work.)